

5

Claims:

1. Preamble structure for the synchronization of a receiver of a OFDM transmission system, wherein

- 10 - the structure comprises at least one first part (A-FIELD),  
 - the time domain signal of the at least one first part (A-FIELD) being generated by IFFT transforming frequency domain sequences of 12 complex symbols mapped to a 64 point IFFT according to the following scheme:

15  $S_{26,26} = \sqrt{2} * \{0, 0, 0, 0, S1, 0, 0, 0, S2, 0, 0, 0, S3, 0, 0, 0, S4, 0, 0, 0, S5, 0, 0, 0, S6, 0, 0, 0, S7, 0, 0, 0, S8, 0, 0, 0, S9, 0, 0, 0, S10, 0, 0, 0, S11, 0, 0, 0, S12, 0, 0, 0, 0\},$

wherein the remaining valued are set to zero,

and the frequency domain sequence  $S_A$  of the at least one first part (A-FIELD) is one of

- $S1...S12 = +A, +A, +A, +A, +A, -A, -A, +A, +A, -A, +A, -A$   
 $S1...S12 = +A, +A, +A, +A, -A, -A, +A, +A, -A, +A, -A, +A$   
 20  $S1...S12 = +A, +B, -A, -B, -A, -B, -A, -B, -A, +B, +A, -B$   
 $S1...S12 = +A, +B, -A, -B, +A, -B, +A, -B, +A, -B, -A, +B$   
 $S1...S12 = +A, -B, -A, +B, -A, +B, -A, +B, -A, -B, +A, +B$   
 $S1...S12 = +A, -B, -A, +B, +A, +B, +A, +B, +A, +B, -A, -B$   
 or an order reversed modification thereof.

25

2. Preamble structure,  
 characterized in that

it comprises at least one second part (B-FIELD) and

the frequency domain sequence of the at least one second part (B-FIELD) is

30  $S_B = (1+i), (-1-i), (1+i), (-1-i), (-1-i), (1+i), (-1-i), (-1-i), (1+i), (1+i), (1+i), (1+i).$

3. Preamble structure according to claim 2,  
characterized in that  
the at least one second part follows the at least one first part in the time domain.

5 4. OFDM transmitter,  
designed for transmitting a synchronization preamble according to anyone of the  
preceding claims in the BCCH channel of an OFDM system.

5. Method for the synchronization of a receiver of a OFDM transmission system,  
10 wherein

- the structure comprises at least one first part (A-FIELD) in the time domain,
- the time domain signal of the at least one first part (A-FIELD) and the at least one  
second part (B-FIELD) being generated by IFFT transforming frequency domain  
sequences of 12 complex symbols mapped to a 64 point IFFT according to the  
15 following scheme:

$$S_{-26,26} = \sqrt{2} * \{0,0,0,0,S1,0,0,0,S2,0,0,0,S3,0,0,0,S4,0,0,0,S5,0,0,0,S6,0,0,0, \\ S7,0,0,0,S8,0,0,0,S9,0,0,0,S10,0,0,0,S11,0,0,0,S12,0,0,0,0\},$$

wherein the remaining valued are set to zero, and

the frequency domain sequence  $S_A$  of the at least one first part (A-FIELD) is one of

20  $S1...S12 = +A, +A, +A, +A, +A, -A, -A, +A, +A, -A, +A, -A$

$$S1...S12 = +A, +A, +A, +A, -A, -A, +A, +A, -A, +A, -A, +A$$

$$S1...S12 = +A, +B, -A, -B, -A, -B, -A, -B, -A, +B, +A, -B$$

$$S1...S12 = +A, +B, -A, -B, +A, -B, +A, -B, +A, -B, -A, +B$$

$$S1...S12 = +A, -B, -A, +B, -A, +B, -A, +B, -A, -B, +A, +B$$

25  $S1...S12 = +A, -B, -A, +B, +A, +B, +A, +B, +A, +B, -A, -B$

or an order reversed modification thereof.

6. Method according to claim 5,

characterized in that

30 it comprises at least one second part (B-FIELD) and

the frequency domain sequence of the at least one second part (B-FIELD) is

$$S_B = (1+i), (-1-i), (1+i), (-1-i), (-1-i), (1+i), (-1-i), (-1-i), (1+i), (1+i), (1+i), \\ (1+i)$$

7. Method according to claim 6,  
characterized in that

the at least one second part follows the at least one first part in the time domain.